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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,011	10/31/2003	William D. Holland	10014648-1	1436

22879 7590 04/12/2007
HEWLETT PACKARD COMPANY
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INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

KRASNIC, BERNARD

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/699,011

Applicant(s)

HOLLAND, WILLIAM D.

Examiner

Bernard Krasnic

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 13-23 and 27-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 13-23 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10-31-2003 and 7/05/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Election/Restriction filed 2/12/2007 have been entered and made of record.

The Applicant has elected with traverse claims 1-7 and 13-17 (I).

2. The Applicant has canceled "claims 8-12 and 24-26 of groups II and IV without prejudice".

3. The Applicants traversal arguments toward the restriction of claims 18-23 and 27-30 of groups III and V are persuasive. Therefore the Examiner has withdrawn the restriction of groups I, III and V and will consider claims 1-7, 13-23, and 27-30.

Specification

4. The following title is suggested: -- HARD IMAGING METHOD AND DEVICE
OPTICAL SCANNING SYSTEMS --.

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

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6. The abstract of the disclosure is objected to because it is not narrative. It consists and has been drafted as one long run-on sentence, much like claim 1, which is improper. The intent of the abstract is to give a concise but brief statement of the disclosure or the invention as a whole consisting of a series of complete sentences forming a single paragraph. Also, "According to one embodiment, a hard imaging" is suggested to be -- A hard imaging --.

Correction is required. See MPEP § 608.01(b).

Claim Objections

7. Claims 1, 7, and 27 are objected to because of the following informalities:

Claim 1, line 9: "to reduce the introduction" should be -- to reduce an introduction --.

Claim 7, line 2: "modifying the timing of the outputting" should be -- modifying a timing of an outputting --.

Claim 27, line 10: "the accuracy" should be -- an accuracy --.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

8. Claims 27-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 27 is drawn to functional descriptive

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material NOT claimed as residing on a computer readable medium. MPEP

2106.IV.B.1(a) (Functional Descriptive Material) states:

"Data structures not claimed as embodied in a computer-readable medium are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer."

"Such claimed data structures do not define any structural or functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized."

Claims 27, while defining "processor-usable media comprising programming", does not define a "computer-readable medium" and is thus non-statutory for that reasons. A "processor-usable media comprising programming" can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" in order to make the claim statutory. The limitation in claim 27 "processor-usable media comprising programming configured to cause" should be -- computer-readable medium encoded with computer-readable instructions to cause -- which is supported by the Applicants specification in paragraph [0020].

"In contrast, a claimed computer-readable medium encoded with the data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory." - MPEP

2106.IV.B.1(a)

Claims 28-30 are dependent upon claim 27.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 3-5, 7, 13, 16, 18-19, 23, and 27-28 are rejected under 35

U.S.C. 102(b) as being anticipated by Ishigami et al (US 5,933,184).

Re Claim 1: Ishigami discloses a hard imaging method / color image forming device (Fig. 1) comprising providing image data / image signal (7) corresponding to a hard image / color image to be formed (see Fig. 1, col. 4, lines 47-65); generating light / laser light source (5) responsive to the image data / image signal (see Fig. 1, col. 4, lines 42-51, col. 2, lines 61-67); scanning / scan the light to form a latent image / latent image corresponding to the hard image / color image to be formed (see col. 4, lines 34-39, lines 42-51, col. 2, lines 61-67); accessing / optical system (3) the generated correction data / uniform velocity correction data corresponding to scanning errors / uniform velocity error of a scan lens / mirror surface intermediate a rotating reflection device / rotary polygon mirror (6) and a photoconductor / photosensitive body (4) (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66); and modifying / corrects distortion the image data / image signal using the correction data / uniform velocity correction data before the generating (see col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66), the modifying / correcting distortion comprising modifying to reduce / correct the introduction

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of image errors / uniform velocity error resulting from the scanning / scan using the scan lens / mirror surface (see col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

Re Claim 13: Ishigami discloses a hard imaging device / color image forming device (see Fig. 1) comprising an interface / optical system (3) configured to access image data / image signal (7) corresponding to images / color image to be formed using a hard imaging device (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66); and processing circuitry / image clock generating unit (9) coupled with the interface / optical system and configured to access the image data / image signal, to access correction data / uniform velocity correction data corresponding to scanning error / uniform velocity error of an optical scanning system / optical system (3) of the hard imaging device / color image forming device, to modify / correct distortion the image data / image signal according to the correction data / uniform velocity correction data to reduce / correct image errors / uniform velocity errors introduced during optical scanning of the image data using the optical scanning system (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

Re Claim 18: Ishigami discloses a hard imaging device / color image forming device (see Fig. 1) comprising an optical scanning system / optical system (3) configured to access image data / image signal (7) to be used to form a hard image / color image (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66), to generate light / laser light source (5) corresponding to the image data / image signal, and to direct the

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generated light / laser light source indicative of the image data / image signal to a photoconductor / photosensitive body (4) (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66), wherein the optical scanning system / optical system produces images upon the photoconductor / photosensitive body which differ from images of the generated light, the difference resulting from scanning errors / uniform velocity error in the optical scanning system (see col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66); and processing circuitry / image clock generating unit (9) configured to modify / correct distortion the image data / image signal prior to application of the image data to the optical scanning system / optical system, wherein the modification / correct distortion of the image data comprises modifying the image data to control the generation of light / laser light source within the optical scanning system in a manner to reduce / correct the presence of image errors / uniform velocity errors in a resultant image formed on the photoconductor / photosensitive body and caused by the scanning errors / uniform velocity error of the optical scanning system (see col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66, the uniform velocity correction data is used to improve the image quality, col. 3, lines 16-24).

Re Claim 27 [as best understood by the Examiner]: Ishigami discloses an article of manufacture comprising processor-usable media comprising programming configured to cause processing circuitry / image clock generating unit (9) of a hard imaging device / color image forming device to access image data / image signal (7) corresponding to an initial image to be hard imaged using the hard imaging device (see Fig. 1, col. 2, lines

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58-67, col. 3, lines 1-16, col. 4, lines 30-66, processor usable media is within the electro-photographic printer system, abstract, lines 17-21); access correction data / uniform velocity correction data corresponding to image errors / uniform velocity error introduced by an optical scanning system / optical system (3) of the hard imaging device / color image forming device and configured to emit light / laser light source (5) during hard imaging operations; modify / correct distortion the image data / image signal responsive to the correction data / uniform velocity correction data to improve the accuracy / quality of a hard image formed by the optical scanning system / optical system responsive to the image data / image signal and with respect to the initial image; and output the modified / corrected image data to the optical scanning system / optical system of the hard imaging device (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66, the uniform velocity correction data is used to improve the image quality, col. 3, line 16-24).

Re Claim 3: Ishigami further discloses the scanning / scan comprises scanning / scan using an optical scanning system / optical system having the scanning errors / uniform velocity error comprising geometric distortion / distortion characterized by the optical system of the scan lens / mirror surface, and the accessing comprises accessing the correction data / uniform velocity correction data corresponding to the geometric distortion / distortion characterized by the optical system (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

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Re Claim 4: Ishigami further discloses the accessing comprises accessing the correction data / uniform velocity correction data configured to reduce / correct the image errors / uniform velocity error resulting from the geometric distortion / distortion characterized by the optical system (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

Re Claim 5: Ishigami further discloses scanning /scan comprises scanning / scan to form the latent image / latent image upon the photoconductor / photosensitive body (4) (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

Re Claim 7: Ishigami further discloses the modifying / correcting distortion comprises modifying the timing / image clock with scanning time of the outputting of the image data / image signal to a light source / laser light source configured to generate the light (col. 3, lines 1-16).

Re Claim 16: Ishigami further discloses the processing circuitry / image clock generating unit is configured to modify / correct the image data / image signal using the correction data / uniform velocity correction data (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66) corresponding to a geometric distortion / distortion characterized by the optical system of a scan lens / mirror surface of the optical scanning system of the hard imaging device (see col. 4, lines 52-67).

As to claim 19, the discussions are addressed with respect to claims 3 and 16.

Re Claim 23: Ishigami further discloses a system of the hard imaging device comprising an electrophotographic printer (see abstract, lines 17-21).

Re Claim 28: Ishigami further discloses the processing circuitry / image clock generating unit to access the correction data / uniform velocity correction data comprising correction data configured to reduce / correct the image errors / uniform velocity errors introduced by the optical scanning system / optical system (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2, 6, 14-15, 21-22, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishigami as applied to claims 1, 13, 18, and 27 above. The teachings of Ishigami have been discussed above.

Re Claim 2: Ishigami further discloses rasterizing the image data (see Ishigami, Fig. 11a-b, col. 3, lines 59-61, the data is scanned in a main direction which essentially is raster scanning) from an initial format to raster image data, and wherein the modifying

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comprises modifying during the rasterizing (see Ishigami, Fig. 11a-b, col. 3, lines 59-61).

Although Ishigami doesn't specifically disclose rasterizing the image data, it would have been obvious to one of ordinary skill in the art at the time the invention was made to realize that the main scan direction is essentially rasterizing (see Chase et al, US 6,611,348 B1, col. 7, lines 57-62, Chase shows that one of ordinary skill realizes that a printer includes a raster image processor to rasterize files from one data type to another when the binary pixel information will be used for manipulation or in this case correction).

As to claim 15, the claim is the corresponding system claim to claim 2 respectively. The discussions are addressed with regard to claim 2.

As to claim 22, the discussions are addressed with respect to claim 15.

Re Claim 6: Ishigami further discloses the modifying comprises modifying using a raster image processor (see Fig. 11a-b, col. 3, lines 59-61, the data is scanned in a main direction which essentially is raster scanning).

Although Ishigami doesn't specifically disclose rasterizing the image data with a raster image processor, it would have been obvious to one of ordinary skill in the art at the time the invention was made to realize that the main scan direction is essentially rasterizing with a raster image processor (see Chase et al, US 6,611,348 B1, col. 7,

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lines 57-62, Chase shows that one of ordinary skill realizes that a printer type device includes a raster image processor to rasterize files from one data type to another when the binary pixel information will be used for manipulation or in this case correction).

As to claim 14, the claim is the corresponding system claim to claim 6 respectively. The discussions are addressed with regard to claim 6.

As to claim 21, the discussions are addressed with respect to claim 14.

As to claim 30, the discussions are addressed with respect to claim 14.

13. Claims 17, 20, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishigami as applied to claims 13, 18, and 27 above, in view of Theodoracatos ("A 3-D vision system model for automatic object surface sensing" – International Journal of Computer Vision, 1993, pages 75-99). The teachings of Ishigami have been discussed above.

Re Claim 17: Ishigami further discloses the processing circuitry / image clock generating unit is configured to modify / correct the image data / image signal using the correction data / uniform velocity correction data (see Fig. 1, col. 2, lines 58-67, col. 3, lines 1-16, col. 4, lines 30-66) comprising an inverse representation of the geometric distortion (Ishigami only discloses a correction distortion).

However, Ishigami fails to disclose or fairly suggest the correction data comprises an inverse representation of the geometric distortion.

Theodoracatos discloses the correction data comprising an inverse representation of the geometric distortion / inverse perspective technique (see page 85, Section – 6.1 Camera Goemetric Distortion, paragraph 2, lines 5-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishigami's device using Theodoracatos's teachings by including the inverse perspective technique to the correction data in order to reduce the distortion which is produced by the nonlinear results of the lens (see Theodoracatos, page 85, Section – 6.1 Camera Goemetric Distortion, paragraph 1).

As to claim 20, the discussions are addressed with respect to claim 17.

As to claim 29, the discussions are addressed with respect to claim 17.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chase et al discloses a system and method for communication over a TCP/IP network with an appletalk network for publishing and printing services; Florent et al discloses a method and device for processing an image in order to construct a target image from a plurality of contiguous source images; Eguchi discloses a recording apparatus with position dependent pulse modulation; Araki et al discloses a laser scanning unit having automatic power control function; Tompkins et al discloses

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an adaptive error correction device for a laser scanner; Emon discloses a method and apparatus for controlling scanning velocity and amount of light for forming color image; James discloses a multispot polygon ros with maximized line separation depth of focus.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-1357. The examiner can normally be reached on Mon-Thur 9:00am-3:00pm and every other Friday 9:00am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic
March 30, 2007


JINGGE WU
SUPERVISORY PATENT EXAMINER